

# PATENT COOPERATION TREATY

From the  
INTERNATIONAL SEARCHING AUTHORITY

## PCT

To:

see form PCT/ISA/220

### WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY (PCT Rule 43bis.1)

Date of mailing  
(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference  
see form PCT/ISA/220

**FOR FURTHER ACTION**  
See paragraph 2 below

International application No.  
PCT/US2004/010991

International filing date (day/month/year)  
08.04.2004

Priority date (day/month/year)  
14.04.2003

International Patent Classification (IPC) or both national classification and IPC  
G11C11/56, G11C5/14, G11C7/06, G11C16/26

Applicant  
SANDISK CORPORATION

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☒ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

#### 2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA"). However, this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of three months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

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WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITYInternational application No.  
PCT/US2004/010991

1020 Rec'd PCT 13 OCT 2005

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Box No. I Basis of the opinion

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1. With regard to the **language**, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.
  - ☐ This opinion has been established on the basis of a translation from the original language into the following language , which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).
2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
  - a. type of material:
    - ☐ a sequence listing
    - ☐ table(s) related to the sequence listing
  - b. format of material:
    - ☐ in written format
    - ☐ in computer readable form
  - c. time of filing/furnishing:
    - ☐ contained in the international application as filed.
    - ☐ filed together with the international application in computer readable form.
    - ☐ furnished subsequently to this Authority for the purposes of search.
3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

**WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY**

International application No.  
PCT/US2004/010991

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**Box No. II Priority**

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1. ☒ The following document has not been furnished:

☒ copy of the earlier application whose priority has been claimed (Rule 43*bis*.1 and 66.7(a)).

☐ translation of the earlier application whose priority has been claimed (Rule 43*bis*.1 and 66.7(b)).

Consequently it has not been possible to consider the validity of the priority claim. This opinion has nevertheless been established on the assumption that the relevant date is the claimed priority date.

2. ☐ This opinion has been established as if no priority had been claimed due to the fact that the priority claim has been found invalid (Rules 43*bis*.1 and 64.1). Thus for the purposes of this opinion, the international filing date indicated above is considered to be the relevant date.

3. Additional observations, if necessary:

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**Box No. V Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

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1. Statement

Novelty (N)	Yes: Claims	2,3,7,9,10,13,14,17,18
	No: Claims	1,4,5,6,8,11,12,15,16,19
Inventive step (IS)	Yes: Claims	
	No: Claims	1-19
Industrial applicability (IA)	Yes: Claims	1-19
	No: Claims	

2. Citations and explanations

see separate sheet

**WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING  
AUTHORITY (SEPARATE SHEET)**

PCT/US2004/010991

**Re Item V****Reasoned statement with regard to novelty, inventive step or industrial  
applicability; citations and explanations supporting such statement**

1. Reference is made to the following documents:

D1: US-B-6 542 4071 (CHEN JIAN ET AL) 1 April 2003 (2003-04-01)

D2: US 2002/101778 A1 (KHAN SAKHAWAT M) 1 August 2002 (2002-08-01)

2. The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claim 1 is not new in the sense of Article 33(2) PCT.

Document D1 discloses in figure 3(B) and in the related description (the references in parentheses applying to this document) a memory comprising: a non-volatile data storage element capable of storing a first data state (45") characterized by a negative threshold voltage and one or more second data states (47", 49", 51") characterized by a positive threshold voltage; and sense circuitry connectable to the data storage element that can distinguish the data state of the storage element, comprising: a compensation circuit, whereby the parameter used by the sense circuit to distinguish between the first and second data states is compensated (by  $\Delta$ ) based on operating conditions.

3. The provision of the features claimed in claims 2 to 10 can not be considered to comprise subject matter which meets the requirements of novelty (Article 33(2) PCT) and inventive step (Article 33(3) PCT). In particular, compensating for temperature of power supply (see D2, paragraphs [0040] and [0051]); a plurality of second states (D1, fig. 3); the parameter being a threshold voltage (D1, fig. 3); the parameter being in the range from 0 to 0.2 (includes 0 volt which is known from D1, fig. 3(A)); the parameter being a current (equivalent to the voltage, see application paragraph [0005]); compensating also the program verify level (see D1, fig. 3(B), the verify level for 47" is shifted  $\Delta$  volts compared to  $V_{10}$ , which is the verify level for 47 in fig. 3(A)); and a band gap generator (see D2, para. [0040] and [0051]) can either directly be found in D1 and D2 or concern obvious modifications of the prior art and add nothing inventive to the preceding claims.
4. Independent method claim 11 is a method counterpart claim of independent apparatus claim 1 and dependent method claims 12 to 18 are method counterpart

claims of claims 4, 2, 3, 5, 6, 7 and 9, respectively.

Independent apparatus claim 19 repeats claim 1 in a slightly different wording.

Hence what has been said with reference to claims 1 to 9 also concerns claims 11 to 19 mutatis mutandis.

5. Further observations:

- The independent claims are not cast in two part form, contrary to Rule 6.3(b) PCT.
- The claims do not contain reference signs, contrary to Rule 6.2(b) PCT.
- The relevant prior art (D1 and D2) is not acknowledged in the description, contrary to Rule 5.1(a)(ii).

6. In view of the objections above, it is not apparent how it could be possible to draft an independent claim meeting the requirements of Article 33(2) and (3) PCT.

Should the applicant, nevertheless, regard some particular matter as patentable, and, thus, intend to submit new claims, his attention is drawn to the following:

- An explanation relating to the problem solved by the features distinguishing the new independent claim from the present independent claims and the prior art as well as relating to the essence of said distinguishing features for obtaining the solution should be given.